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Review Article

National Health Policy in the Field of Non-communicable Disease Prevention in Turkmenistan

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Abstract

Noncommunicable diseases (NCDs) have become the leading cause of disease burden and death globally and in Central Asia. Since the government defined the strategic priorities for the development of the national healthcare system more than thirty years ago, Turkmenistan has continuously advanced the modernization of its medical infrastructure and the development of its health workforce. This paper systematically elaborates on the country's policy practices and achievements in the field of NCD prevention. Research indicates that medical infrastructure has been fully modernized, with two cardiology centers, two oncology centers, and multiple specialized centers newly established in the capital region, while medical experts have received training in modern diagnostic and treatment methods at leading European medical centers. However, pure medical interventions can explain only about 15% to 20% of the factors influencing population health, whereas lifestyle and environmental factors determine over 60% of the overall health status of the population. To this end, Turkmenistan has established an extensive network of health resorts and rehabilitation facilities, including the Awaza resort area on the Caspian Sea coast, and has built numerous sports facilities meeting Olympic standards. In the area of tobacco control, following its accession to the WHO Framework Convention on Tobacco Control, the country implemented a comprehensive national tobacco control program, adopted the STEPwise approach for standardized data collection and analysis, and achieved a reduction in smoking prevalence to 8%. At the same time, the country conducts dynamic epidemiological surveillance of other major risk factors associated with NCDs, including obesity, alcohol abuse, arterial hypertension, hypercholesterolemia, diabetes, physical inactivity, and unhealthy dietary habits. Through the CINDI program and collaboration with the WHO Collaborating Centre for NCD Prevention, it has established effective cross-sectoral, cross-institutional, and cross-regional partnerships. Establishing an effective, evidence-based NCD prevention system has become a sustainable national priority for Turkmenistan.

Keywords: Noncommunicable diseases, National health policy, Disease prevention, Turkmenistan, Tobacco control, Risk factor surveillance.

Introduction

Noncommunicable diseases mainly include cardiovascular diseases, malignant tumors, chronic respiratory diseases, and diabetes mellitus, and they are the leading causes of death and disability worldwide. Data from the World Health Organization show that NCDs kill approximately 41 million people each year, accounting for 71% of all global deaths,

with low- and middle-income countries bearing more than 85% of the burden of premature deaths [1,2].

Turkmenistan, located in Central Asia with a population of approximately 6.5 million, has faced the challenge of a continuously increasing NCD burden alongside its economic and social development in recent years. The incidence rates of chronic diseases such as cardiovascular diseases, hypertension, and diabetes have been rising year by year, becoming key public health issues affecting national health and sustainable socioeconomic development [3,5]. To address this challenge, the government of Turkmenistan has integrated NCD prevention into the core agenda of its national health strategy and has implemented a series of systematic policy interventions.

This paper aims to systematically elaborate on Turkmenistan's national health policies in the field of NCD prevention, covering multiple dimensions including medical infrastructure modernization, health workforce development, health resort networks, sports facility development, tobacco control, multi-risk-factor surveillance, and international cooperation.

Strategic Priorities for the Development of the National Healthcare System and Modernization

More than thirty years ago, the government defined the strategic priorities for the development of the national healthcare system. Since that time, the material and technical infrastructure of the healthcare sector has been fully modernized. This process has required substantial financial investment, but it was imperative due to the severe obsolescence of medical equipment and facilities [4].

In the capital region alone, two well-equipped cardiology centers and two oncology centers have been newly constructed, along with specialized centers for endocrinology, neurology, pulmonology, and physiology, as well as the largest rehabilitation center in the region. The completion of these specialized centers has endowed Turkmenistan with regional leading capabilities in cardiovascular interventions, cardiac surgery, oncological radiotherapy and chemotherapy, neurological rehabilitation, endocrine and metabolic disease management, and chronic respiratory disease diagnosis and treatment [4, 5].

The two cardiology centers respectively handle emergency interventional treatment for acute myocardial infarction and elective cardiac surgery, equipped with digital subtraction angiography systems, cardiopulmonary bypass equipment, and intensive care units. The two oncology centers provide full-cycle services from early screening and pathological diagnosis to surgery, radiotherapy, and chemotherapy, significantly reducing diagnostic and treatment waiting times for cancer patients. The Endocrinology Center focuses on standardized diabetes management and complication screening. The Neurology Center specializes in acute-phase stroke treatment and secondary prevention. The Pulmonology Center has achieved notable progress in the standardized

diagnosis and treatment of chronic obstructive pulmonary disease and bronchial asthma [6].

Based on the construction of specialized centers, Turkmenistan has further established a four-tier medical service network consisting of "capital specialized centers—regional general hospitals—community health centers—rural clinics." Currently, 28 regional general hospitals, 156 community health centers, and 428 rural clinics have been established nationwide, achieving universal coverage of medical services across urban and rural areas [5].

Development of the Healthcare Workforce

The healthcare workforce has been significantly renewed, with medical experts receiving training at leading European medical centers and mastering modern diagnostic and treatment methods in both conservative therapy and surgery [4]. Specifically, Turkmenistan has adopted a dual-track talent development strategy of "domestic training + international study." Domestically, the Ashgabat State Medical University and other medical colleges have strengthened their curricula in chronic disease prevention, epidemiology, health management, and related subjects. Internationally, the government annually selects outstanding physicians for systematic training lasting 6 to 18 months at leading medical centers in Germany, Switzerland, Italy, Turkey, Russia, and other countries, focusing on NCD-related specialties such as cardiovascular interventions, comprehensive cancer treatment, endocrine and metabolic disease management, and neurological rehabilitation [6,7].

According to statistics from the Ministry of Health of Turkmenistan, as of 2023, over 1,200 physicians have completed advanced training at leading European medical centers, with most of them becoming backbone professionals in medical institutions at various levels upon their return. Concurrently, standardized training in chronic disease management for primary healthcare workers has been systematically advanced. The training covers standardized diagnosis and treatment of hypertension and diabetes, NCD risk factor screening, and health education and counseling skills, with the coverage rate of primary training reaching over 95% [5, 7].

Limitations of Medical Interventions and the Dominant Role of Lifestyle

Ample evidence has shown that even with advanced technological means, pure medical interventions can explain only about 15% to 20% of the factors influencing population health. In contrast, lifestyle and environmental factors play a decisive role in life expectancy and determine over 60% of the overall health status of the population [2][8].

This understanding constitutes the scientific basis for the transformation of Turkmenistan's health policy from a "treatment-centered" to a "prevention-centered" approach. Behavioral factors such as unhealthy diet, physical inactivity, tobacco use, and excessive alcohol consumption, along with

environmental factors such as air pollution, housing conditions, and social environment, collectively influence the occurrence, development, and outcomes of NCDs [8].

Based on this evidence, Turkmenistan has extended the focus of its health policy from pure medical services to include health promotion, disease prevention, and lifestyle interventions, forming an integrated policy framework of "treatment—rehabilitation—prevention."

Health Resort and Rehabilitation Facility Network

An extensive network of health resort and rehabilitation facilities has been established nationwide, including the Awaza resort area on the Caspian Sea coast, which is very popular among local residents [4].

The Awaza resort area is a modern resort and rehabilitation base that Turkmenistan has focused on developing in recent years, integrating rehabilitation therapy, hydrotherapy, climatotherapy, exercise rehabilitation, and chronic disease management. The resort area has advanced rehabilitation assessment equipment and a professional rehabilitation team, focusing on the rehabilitation needs of patients with cardiovascular diseases, respiratory diseases, bone and joint diseases, and metabolic diseases [4,5].

Statistics show that the Awaza resort area receives over 100,000 visitors annually for rehabilitation purposes, a considerable proportion of whom are patients in the rehabilitation phase of NCDs. The construction of the resort area has not only met the rehabilitation needs of residents but has also driven the development of health tourism along the Caspian coast, creating a virtuous cycle of coordinated development between health services and the regional economy [5].

In addition to the Awaza resort area, 18 provincial rehabilitation centers and 76 community rehabilitation stations have been established nationwide, forming a three-tier rehabilitation service network of "national—provincial—community." These facilities have established smooth referral mechanisms with medical institutions at various levels, allowing patients to be transferred to rehabilitation facilities promptly after acute-phase treatment for subsequent functional recovery and lifestyle adjustment, achieving seamless "treatment—rehabilitation" integration in the comprehensive management of NCDs [6].

Modernization and Development of the Sports Sector

The sports sector has also undergone significant modernization and development: numerous sports facilities meeting the highest Olympic standards have been built and are in normal operation, including indoor and outdoor training centers for track and field, swimming, tennis, martial arts, weightlifting, as well as yoga and chess [4].

As of 2023, 32 modern stadiums and 156 indoor and outdoor training centers have been built nationwide. The Olympic Sports Complex in Ashgabat is the largest and best-equipped sports facility in the country, capable of hosting international

events in track and field, swimming, gymnastics, and other sports. Specialized facilities such as tennis centers, martial arts halls, weightlifting training halls, yoga centers, and chess training rooms provide diverse sports options for residents with different interests and needs [5].

Objective data show a significant increase in enthusiasm for sports and fitness activities among different population groups. Behind this change is the government's sustained investment and promotion in the field of universal fitness over many years. Turkmenistan makes sports facilities available to the public at low or no cost, encourages residents to participate in physical exercise during their leisure time. At the same time, school physical education curricula have been strengthened, community fitness activities have been organized and promoted, and the media continuously publicizes the health benefits of exercise [4].

According to data from the State Committee of Turkmenistan on Statistics, the proportion of the population aged 15 to 64 engaging in physical exercise at least three times per week increased from approximately 32% in 2010 to approximately 58% in 2023 [5].

National Tobacco Control Program

An exemplary model of a successful large-scale prevention strategy is the comprehensive national tobacco control program implemented by the country after acceding to the WHO Framework Convention on Tobacco Control. In collaboration with the World Health Organization, the STEPwise approach was adopted for standardized data collection and analysis, and the results showed that the smoking rate had fallen to 8% [4,9].

Turkmenistan acceded to the WHO Framework Convention on Tobacco Control in 2005 and subsequently completed domestic legislative supporting measures, establishing a comprehensive tobacco control system covering multiple components including legislation, enforcement, health education, and smoking cessation services. Core measures include: a comprehensive ban on smoking in public places, including restaurants, bars, workplaces, and public transportation; a comprehensive ban on tobacco advertising, promotion, and sponsorship; a significant increase in tobacco taxes, making tobacco products markedly more expensive; health warning pictures and text on cigarette packaging; and the provision of smoking cessation counseling and brief interventions for smokers wishing to quit [9].

The STEPwise approach, recommended by the World Health Organization, is specifically designed for standardized surveillance of NCD risk factors. The method comprises three steps: Step 1 involves a questionnaire survey collecting information on smoking, alcohol consumption, diet, physical activity, and other behaviors; Step 2 involves physical measurements including height, weight, waist circumference, and blood pressure; and Step 3 involves biochemical tests including blood glucose and blood lipids [2,10].

Through the comprehensive interventions described above, the smoking rate in Turkmenistan has significantly decreased to 8% [1][9].

However, given the status of tobacco use as a major risk factor for NCDs, continuous monitoring remains crucial. Prevention efforts should be combined with education and information campaigns targeting teachers, healthcare professionals, and law enforcement personnel [4,9].

Multi-Risk-Factor Surveillance

Further efforts should ensure objective and dynamic epidemiological surveillance of other major risk factors associated with NCDs, including obesity, alcohol abuse, arterial hypertension, hypercholesterolemia, diabetes, physical inactivity, and unhealthy dietary habits. Several of these risk factors also contribute to accidents and injuries [4].

According to recent STEPwise surveillance data, the prevalence of major risk factors among the adult population of Turkmenistan is as follows: obesity rate of 22%, hypertension prevalence of 28%, diabetes prevalence of 11%, alcohol abuse rate of 15%, physical inactivity rate of 42%, and insufficient daily fruit and vegetable intake rate of approximately 61% [5][10]. These data indicate that risk factors other than tobacco are also widespread and often present as multiple risk factors clustered in the same individual.

Hypertension, obesity, and diabetes often coexist, forming metabolic syndrome and significantly increasing the risk of cardiovascular disease and stroke. Unhealthy dietary habits (high salt, high fat, low fruit and vegetable intake) are common drivers of hypertension, obesity, and dyslipidemia. Therefore, single-risk-factor intervention strategies have limited effectiveness, and comprehensive interventions targeting multiple risk factors are necessary [2,8].

International Cooperation: The CINDI Program and WHO Collaborating Centre

In this context, previous cooperation experience with the WHO Regional Office for Europe under the framework of the CINDI program (Countrywide Integrated Noncommunicable Diseases Intervention Programme) is of great value; at the same time, re-establishing the collaborative relationship with the WHO Collaborating Centre for NCD Prevention is equally crucial [4,11].

The CINDI program is a regional NCD comprehensive intervention program promoted by the WHO Regional Office for Europe, implemented in Turkmenistan since the early 2000s. The core components of the program include: conducting NCD risk factor screening at the community level; training primary healthcare workers in risk factor assessment and intervention skills; promoting healthy lifestyles including healthy diet, regular exercise, smoking cessation, and alcohol restriction to the public; and establishing a risk factor surveillance information system to track intervention effects [10,11].

Under the CINDI program framework, Turkmenistan has screened over 500,000 high-risk individuals, trained more than 3,000 primary healthcare workers, and established NCD risk factor intervention networks in over 80% of communities [11].

In 2023, Turkmenistan formally re-established its collaborative relationship with the WHO Collaborating Centre for NCD Prevention. The WHO Collaborating Centre for NCD Prevention possesses extensive international experience in the field of global NCD prevention and control. Following the re-establishment of the collaborative relationship, Turkmenistan can receive support in introducing the latest evidence-based interventions, obtaining technical guidance and data analysis support for STEPwise surveillance, participating in regional and global NCD prevention and control networks, and receiving technical assistance in policy formulation and effect evaluation [12].

Such collaboration will help establish effective cross-sectoral, cross-institutional, and cross-regional partnerships aimed at designing and implementing evidence-based interventions to address these risk factors at the national and regional levels, together with the establishment of objective monitoring mechanisms [4,12].

Cross-sectoral partnerships involve multiple government departments including health, education, sports, agriculture, finance, and urban planning. The agricultural sector can reduce salt and trans-fatty acid content in foods through policy guidance. The education sector can integrate healthy lifestyles into school curricula. The sports sector can construct and maintain public sports facilities. The finance sector can regulate tobacco and alcohol consumption through tax policies. The urban planning sector can design and build urban environments conducive to walking and cycling [8].

Cross-institutional partnerships include collaboration between medical institutions at various levels, between medical institutions and rehabilitation centers, and between public and private institutions. The two-way referral and follow-up management mechanism between general hospitals and community health centers ensures continuity of care for NCD patients. Cross-regional partnerships involve collaboration between Turkmenistan and the World Health Organization, other countries, and international non-governmental organizations, enhancing NCD prevention and control capacity throughout the region through technical exchanges, joint training, and resource sharing [11,12].

Establishing an Evidence-Based Prevention System and Conclusion

Therefore, establishing an effective, evidence-based NCD prevention system will become a sustainable national priority [4].

The core elements of an evidence-based NCD prevention system include: a dynamic risk factor surveillance mecha-

nism capable of continuously tracking trends in major risk factors, providing a scientific basis for policy formulation and resource allocation; targeted interventions designed based on surveillance data, selected on the basis of cost-effectiveness analysis; a multi-sectoral collaborative organizational structure ensuring that health objectives are reflected in policies across various sectors; a continuous effect evaluation and quality improvement mechanism, adjusting strategies promptly through regular evaluation of intervention effects; and a sustainable financial guarantee mechanism ensuring the long-term stable implementation of various intervention activities [8,12].

Ultimately, this will reduce the burden of NCDs, improve population health, and extend the number of years of active and healthy life [4].

Since establishing the strategic priorities for the development of the national healthcare system more than three decades ago, Turkmenistan has achieved systematic progress in the field of NCD prevention. Medical infrastructure has been fully modernized, the healthcare workforce has been significantly renewed, lifestyle interventions have been effectively advanced, tobacco control has achieved notable success, and multi-risk-factor surveillance and international cooperation have continuously deepened. Establishing an effective, evidence-based NCD prevention system has become a sustainable national priority for the country, and its continuous improvement will further promote the health of the population.

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